Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

Transverse instability of gravity-capillary solitary waves BOGUK KIM, TRIANTAPHYLLOS R. AKYLAS, MIT — Using perturbation methods, the stability to long-wave transverse perturbations is discussed of gravity–capillary solitary waves for B (Bond number) $< 1/3$ on water of finite or infinite depth. Consistent with Bridges (2001), if the total energy happens to be a decreasing function of wave speed, transverse instability occurs. Solitary waves of depression, although stable to longitudinal perturbations, are thus unstable to transverse perturbations, and this in stability apparently results in the formation of gravity–capillary lumps of the type recently shown to exist for B$<1/3$ (Kim & Akylas 2005). Generalization of the stability analysis to interfacial gravity–capillary solitary waves is also discussed.

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Date submitted: 12 Aug 2005 Electronic form version 1.4